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A NEW SPECIES OF *ACANTHODACTYLUS* (SAURIA: LACERTIDAE) FROM QASR-E-SHIRIN, KERMANSHAH PROVINCE, WESTERN IRAN

By

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A new species of *Acanthodactylus* is described based on material collected in 1995 from the lowlands south of Qasr-e-Shirin, near the Iranian-Iraqi border, Kermanshah province, western Iran, at an elevation of about 285 m. Its larger-size, 8 rows of ventral plates, 48–52 relatively large, imbricate, keeled scales across dorsum, and distinctive color pattern distinguish it from other species of *Acanthodactylus*. The new species, *Acanthodactylus nilsoni*, is related to the "*A. boskianus-schreiberi*" group; it appears to be restricted in distribution to the lowlands of western Kermanshah and probably eastern Iraq.

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The lacertid genus *Acanthodactylus* Wiegman, 1834 consists of about 31 species distributed from Spain and Portugal in southwestern Europe, in North Africa across the Sahara desert and its periphery east to the Red Sea, throughout most of Arabian Peninsula, north to Cyprus and the Syrian-Turkish border; and eastward through Iraq, west, south, and east Iran, southern Afghanistan, to Pakistan and northwest India. All species are relatively small, ranging in size from 52–105 mm snout to vent. They are diurnal and mostly ground-dwellers ordinarily found in relatively flat, open sandy, dry habitats, which usually have at least some vegetation, ranging from open woodland to the borders of quite severe deserts. All species appear to be active hunters and feed largely on small invertebrates. All are oviparous; clutch size varies from two to about seven eggs. The majority of forms seem to mature within a year of hatching although some, like *A. erythrurus* in Spain and Portugal, may take two seasons (Arnold 1983).

Six species of *Acanthodactylus*, the new species included, occur in Iran, primarily in southern and eastern parts of the country. *Acanthodactylus opheodurus* Arnold, may also occur in lowland southwestern Iran (Anderson, in press).

The new species comes from extreme western Kermanshah Province, which to the north and northeast is dominated by the Zagros Mountains and to the west and southwest by lowlands with elevations of 200–700 m.

SPECIES DESCRIPTION

Acanthodactylus nilsoni sp. nov.
(Figs. 1–6)

HOLOTYPE AND TYPE LOCALITY. — Adult male, GNHM Re. ex. 5145, collected by the author on 9 July, 1995, in the lowland regions, 5 km south of Qasr-e-Shirin (34°30′N, 45°33′E), about 7 km to the Iranian-Iraqi border, at 285 m elevation, Kermanshah Province, western Iran.

PARATYPES. — Adult male, GNHM Re. ex. 5146, other information as for the holotype.

DIAGNOSIS. — A medium-sized lacertid (in comparison with the other species of *Acanthodactylus*), maximum SVL = 73.9 mm, TL = 165 mm; 8 longitudinal, and 26 transverse rows of ventral plates; 48–52 rather large, imbricate, keeled scales across dorsum; toes covered with three rows of scales; 9/7 supralabials, four of them anterior to subocular, the latter does not border the mouth; temporals mainly keeled and more than 100 on each side; gular fold distinct; 26–27 gular scales; 10–12 collars; 23–24 lamellae under the fourth toe which is moderately denticulated laterally; eyelids with weak pectination.

DESCRIPTION OF THE HOLOTYPE (preserved in 70% ethyl alcohol, condition good). — Body slightly depressed; head length 1.57 times its width and 28% of snout-vent length; snout pointed but not much narrow, perinarial regions rather distinctly swollen; canthus strong and loreal region slightly concave; a distinct median depression running from frontonasal to anterior frontal; limbs not slender, hind leg about 2.29 times head length; tail length about 2.23 times snout-vent length, somewhat dorsoventrally flattened proximally, becoming laterally compressed distally; rostral rather prominent; paired internasals meet behind rostral, their common suture about 1/4 length of frontonasal, which is hexagonal and broader than long, its greatest width being almost as long as the internarial distance measured at the center of the nostrils; prefrontals longer than broad with a common suture of about 3/5 of their length; frontal distinctly shorter than the distance from its anterior border to tip of snout, its maximum width about half of its length, much narrowed posteriorly where its width is about 1/5 of its length; frontoparietal about half of the length of the frontal with an extensive common suture, each frontoparietal in contact with frontal, third and fourth supraoculars, parietal, and interparietal; parietals longer than broad , their outer borders somewhat sinuous, their posterior margin convex; interparietal small, lozenge-like, surrounded by parietals and frontoparietals, with a clear parietal foramen; no occipital scale; four undivided supraoculars on each side, first in contact with frontal and frontonasal and small, second and third supraoculars large, subequal, both in contact with frontal and frontonasal, fourth supraocular the smallest and in contact with frontoparietal, parietal, first supratemporal, and third supraocular; 6/6 supraciliaries, first largest, keeled, and broadly in contact with first supraocular; 9/11 granules between supraciliaries and last three supraoculars; nostril bordered posteriorly by a single postnasal, anteriorly and dorsally by internasal, inferiorly by first supralabial; rostral not in contact with nostril, separated from it by internasal and first supralabial; two loreals, second much larger than first and strongly keeled, both loreals longer than high; 9/7 supralabials, 4/4 anterior to subocular, fourth the largest and in broad contact with subocular; subocular does not reach mouth, it is much longer than high, strongly keeled, its lower edge in broad contact with fourth, fifth, and sixth supralabials; 7/7 infralabials, sixth the largest; mental roundish anteriorly and in contact with first infralabial and first pair of submaxillary shields, which are in five pairs, the first pair the smallest and in contact with mental and first and second infralabials, scales of first two pairs of submaxillary shields entirely in contact, third pair partly separated by a long gular scale, last two pairs broadly separated, the last three pairs subequal in size; eyelids slightly serrated, scales in center of lower eyelid enlarged and translucent; temporal region with about 104–108 scales on each side, anterior and upper scales distinctly keeled, inferior ones smooth and swollen and distinctly larger than upper ones; two keeled supratemporals, the first more than three times length of second and in contact with parietal and fourth supralabial; tympanic shield vertically elongate, keeled, and moderately developed; tympanum a vertical slit, almost as long as orbit,

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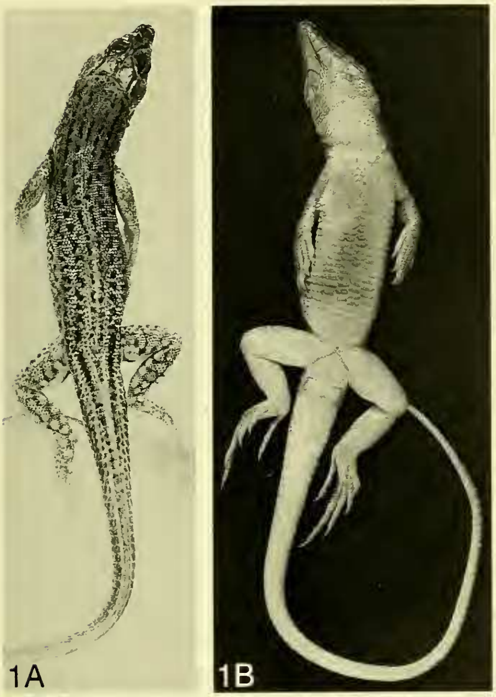
FIGURES 1–6. (1) *Acanthodactylus nilsoni*, holotype. A. Dorsal region, B. Ventral region with only 8 longitudinal rows of plates. (2) *Acanthodactylus nilsoni*, paratype. (3) Comparison of the holotype of *Acanthodactylus nilsoni* (left) with an adult male of *A. boskianus* (right). (4) *Acanthodactylus nilsoni*, temporal and labial regions. (5) *Acanthodactylus nilsoni*, posterior ventral regions and toes fringes. (6) *Acanthodactylus nilsoni*, upper head region with four pairs of intact supraoculars.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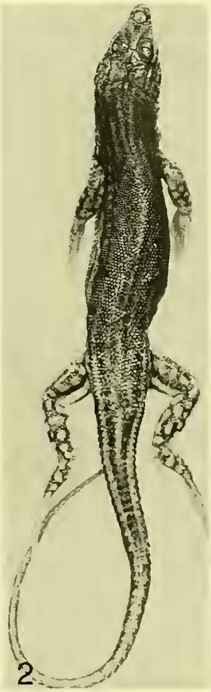
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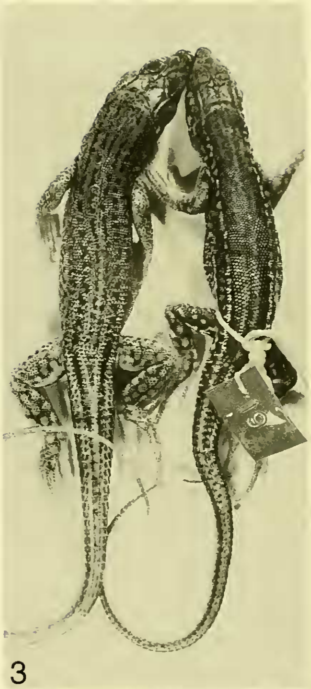
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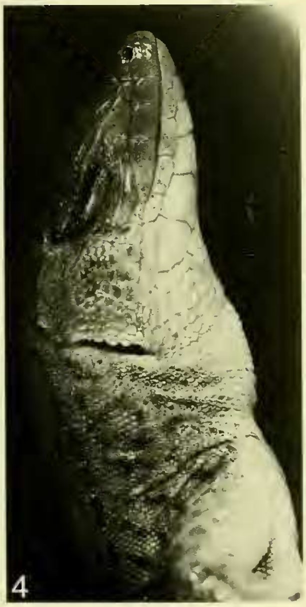
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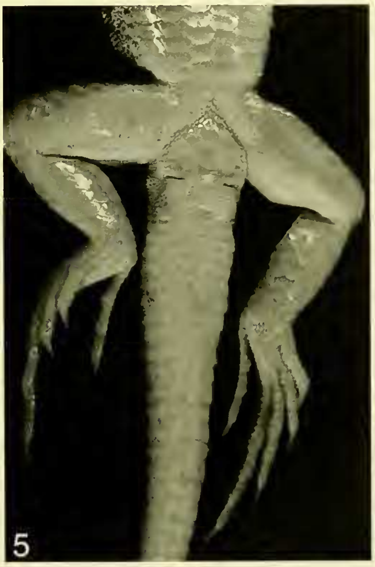
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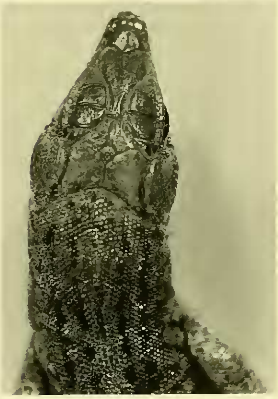
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moderately serrated anterior margin formed by 5/6 scales; postocular higher than long and in contact with anterior supratemporal, fourth supraocular, and last supraciliary; 26–27 gular scales in straight line from symphysis of chin shields to midline of collar, anterior ones small and almost juxtaposed, posteriorly becoming larger, more imbricate and broader; a clear gular fold; collar moderately serrated, attached in the region of midline, curved and formed of 10–12 scales; nape with raised and granular scales with small keels, increasingly in size posteriorly and becoming flat and broad with very obtusely pointed posterior margins; mid-dorsal scales imbricate and keeled; scales on flanks smaller, slightly keeled, although increasing in size towards the ventrals; 48–50 dorsal scales in a transverse row at midbody, of which about 23–25 in the middle of the series are large; 15–16 large dorsal scales in transverse row between hindlimbs; ventral scales strongly imbricate, in regular, straight longitudinal and transverse series, almost all broader than long, 8 in longest longitudinal series across midbody, 26 transverse rows between the collar and hindlimbs; preanal region with two strongly enlarged plates which are broader than long, the more posterior more so than the other, both are surrounded by a semicircle of 7 enlarged scales which, in turn, are bordered by smaller ones; anterior and dorsal surfaces of upper forelegs (humerus) covered with large, imbricate plates that extend onto anterior and dorsal surfaces of lower limb (forearm) but become smaller and keeled posteriorly, rest of forelimb covered with granular scales; fingers weakly denticulate, first four surrounded by three rows of scales, the fifth by four; anterior surface of thigh with row of very large, imbricate scales, bordered above and below by ones that are smaller and decrease in size posteriorly, and on dorsal surface where they are slightly keeled, grade into granules that extend onto posterior surface; 22/22 femoral pores, the two series meet at midline and extend laterally to reach the knee; upper surface of tibia with large, flat, keeled, pointed, imbricate scales that become smaller distally but are larger, more pointed and carinate laterally; ventral surface of tibia covered by longitudinal rows of strongly enlarged, smooth, imbricate plates; toes covered by three rows of scales, the posterior forming a denticulation stronger than on the fingers, and strongest on proximal half of fourth toe; 23/24 unicarinate, keeled lamellae beneath fourth toe; upper caudal scales much larger than posterior dorsals, obtusely pointed and mucronate, with strong keels that form straight lines along tail; ventral caudals smooth, 25–26 scales in fifth whorl behind vent.

Coloration. Upper surface of head olive brown; temporal region and upper surface of forelegs light brown; upper surface of hindlimbs with many large whitish spots bordered by dark brown circles; dorsum greyish brown, with 6–8 interrupted longitudinal dark stripes, the dorsolateral ones having a tendency to form a reticulation; vertebral region without dark stripe; upper surface of tail light brownish grey; ventral surfaces whitish.

Measurements (in mm). Snout-vent length = 73.4, tail length = 143, length of forelimb = 26, length of hindlimb = 48.5, head length = 21.1, head width = 13.4, head depth = 11, tip of snout to forelimb = 29.5.

DESCRIPTION OF THE PARATYPE. — Adult male, similar to the holotype, differing as follows: dorsal scales slightly keeled, 50–52 across widest part of dorsum from which 18–20 scales in midline of series are large; ventral plates in 29 transverse rows from collar to hindlimbs; head length 1.53 times its width and 25% of snout-vent length; hindleg about 2.35 times head length; tail length about 1.63 times snout-vent length; 8/8 supralabials; temporal scales slightly keeled superiorly, raised and smooth inferiorly; postocular separated from last supraciliary by 2–3 granules; tympanum slightly serrated anteriorly, bordered by 4 / 4 scales; 10–11 collar scales; 21–22 unicarinate and keeled lamellae under fourth toe, which is not as strongly serrated as in the holotype; 24/24 femoral pores; 23–24 scales forming fifth caudal whorl behind vent; preanal plate smaller.

Coloration. Upper head region olive brown with many irregular dark brown small spots, temporal region and upper surface of forelimbs with numerous dark brown blotches; dorsum almost uniformly dark greyish brown with traces of 7–8 light stripes on neck and a very pale vertebral line; proximal upper caudal region with four brown and three light stripes, rest of tail with two brownish bands, bordered by three light stripes dorsally and laterally; upper surface of hind legs brown, with many light, round ocelli; ventral surfaces whitish; rostral, mental, and to some extent, submaxillary scales yellowish brown.

Measurements (in mm). Snout-vent length = 71.6, tail length = 116, forelimb = 24, hindlimb = 42, tip of snout to forelimb = 25.9, head length = 17.3, head width = 11.6, head depth = 9.6.

HABITAT. — Semi-arid and arid steppes predominate in the lowland regions of western Iran, west of the Zagros Mountains and its western foothills.

The new species of *Acanthodactylus* reported on here is from the lowland areas of Kermanshah Province, western Iran. The province is located on the western periphery of the Iranian Plateau (Fig. 7). The Zagros Mountains dominate the province's northern and northeastern areas. To the west, near the Iranian-Iraqi border, are lowlands with elevations of 200–700 m. The type locality of *Acanthodactylus nilsoni* is located on this lowland area (Fig. 8), at an elevation of 285 m. This region is the northernmost part of a wide lowland and desert belt that extends to the south, southeast, and southwest. It is characterized by long, hot and dry summers (35°C–50°C) and short, mild winters. The habitat of *A. nilsoni* is characterized by a soft sandy and alluvial substrate covered by desert-adapted vegetation including *Tamarix*, *Astragalus*, *Zygophyllum*, *Artemisia*, *Euphorbia*, and *Alhagi*, as well as numerous species belonging to the family *Graminaceae* (Fig. 9).

I collected this lizard on the sandy and stony hills of the area south of Qasr-e-Shirin.The holotype was foraging among the luxuriant bushes. The paratype was collected about a half hour later; it was actively looking for insects. When alarmed, these lizards took refuge beneath bushes or darted inside small holes. They were shy and wary and difficult to capture. Among other lizards found in this area may be mentioned, *Laudakia nupta nupta*, *Uromastyx loricatus*, *Trapelus ruderatus ruderatus*, *Ophisops elegans*, *Mabuya aurata*, and *Varanus griseus griseus*.

TAXONOMIC ACCOUNT

The genus *Acanthodactylus* is primarily Saharo-Sindian in distribution and only one species, *A. erythrurus*, reaches the Mediterranean and Atlantic coasts of Europe in southern Portugal and Spain (Salvador 1982). The center of origin and diversity for this genus is believed to be the Arabian peninsula and Mesopotamian lowlands and Syrian Desert (Anderson 1966, 1968, in press; Arnold 1973, 1980, 1983). Boulenger (1885) regarded *Acanthodactylus* as the close relative of *Latastia*, which occurs in Africa, but Arnold (1989) places *Acanthodactylus* as the sister taxon of *Mesalina* plus *Ophisops -Cabrita*.

Acanthodactylus has recently been revised by Salvador (1982) and Arnold (1983); they recognized 9 species groups. Of these groups, three are mainly North African, and only two species, *A. cantoris* and *A. blanfordi*, reach as far east as southern Afghanistan, Pakistan, and the deserts of the northern Indian peninsula (Anderson, in press; Clark 1990; Salvador 1982). *Acanthodactylus* does not penetrate the Iranian Plateau to any great extent (Anderson 1966, 1968, in press; Arnold 1983; Leviton et al. 1992; Salvador 1982).

Of the six species of this genus, the new one included, that occur in Iran, *A. micropholis* and *A. grandis* belong to monotypic groups, *A. blanfordi* and *A. schmidti* belong to the "*cantoris*" group, *A. boskianus* and *A. nilsoni* (sp. nov.) belong to the "*boskianus-schreiberi*" group. Based on some similarities it has with both *A. boskianus* and *A. schreiberi* (e.g., more or less intact supraoculars, three series of scales on the fingers, usually four upperlabials anterior to the center of eye, straight longitudinal rows of ventrals, keeled upper caudals), the new species is related to the "*A. boskianus-schreiberi*" group. It differs from both *A. boskianus* and *A. schreiberi* in several species-specific characters (Table 1). For instance, it is easily distinguishable from *A. boskianus* in having only 8 longitudinal rows of ventrals (10–12 in *A. boskianus*), more scales across dorsum (48–52 vs 18–43), weakly keeled temporal scales as well as dorsals, more pointed snout, and more lamellae under the fourth toe (23–24 vs 10–23); from *A. schreiberi* it differs in having larger and usually less numerous dorsals (48–52 vs 43–64), 8 longitudinal rows of ventrals (10 in *A. schreiberi*), 25–26 gular scales in a single longitudinal row (31–46 in *A. schreiberi*), more pointed snout, distinct pectination of the anterior edge of tympanum, and slight pectination of eyelids.

Acanthodactylus boskianus is widely distributed throughout much of North Africa, reaching

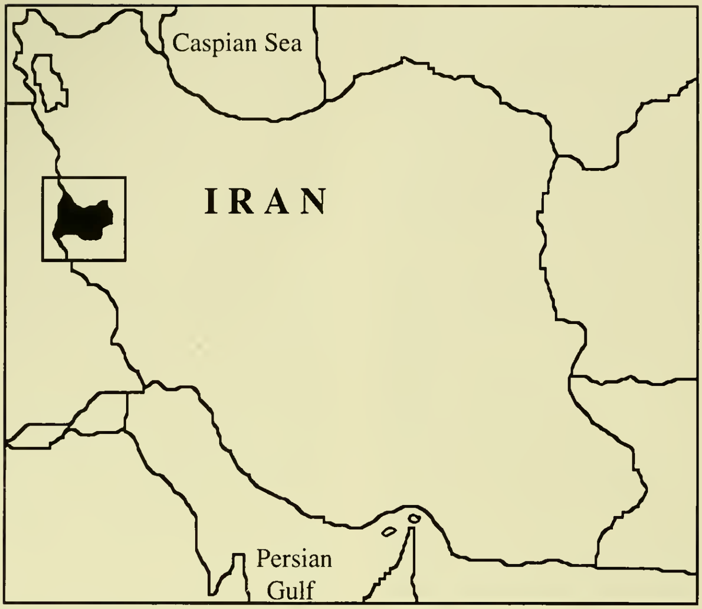

FIGURE 7. Location of Kermanshah Province on the Iranian Plateau.

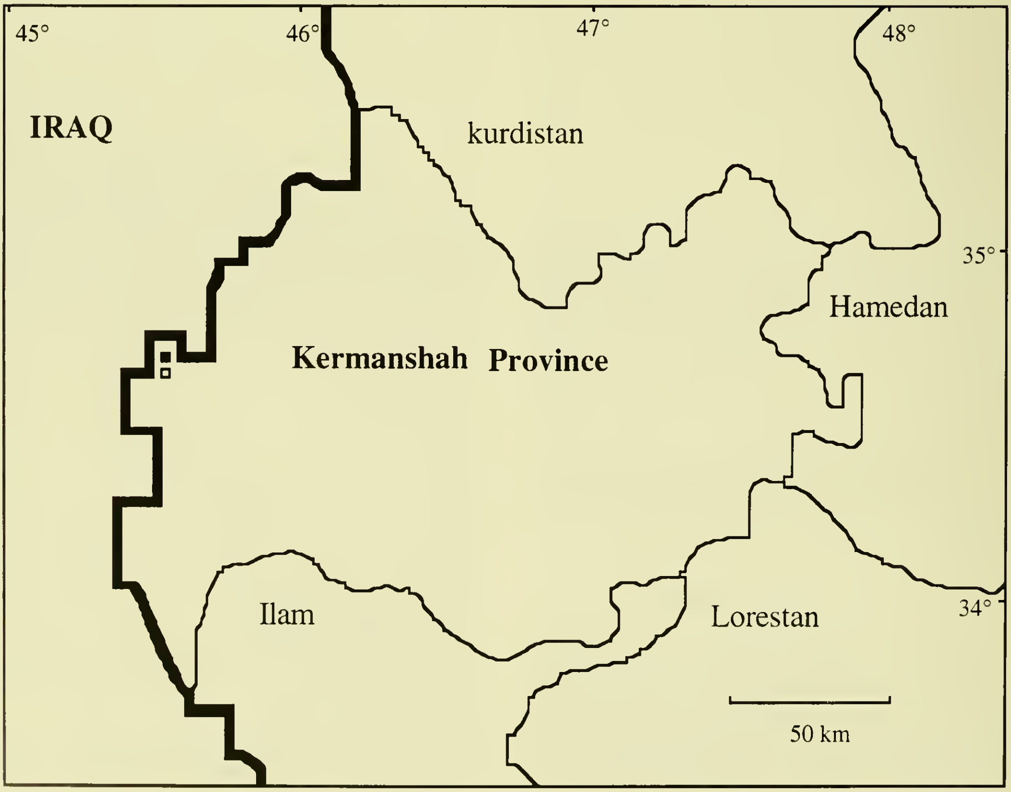

FIGURE 8. The type locality of *Acanthodactylus nilsoni*, 5 km south of Qasr-e-Shirin, Kermanshah province, western Iran. (☐) = Type locality, (■) = Qasr-e-Shirin.

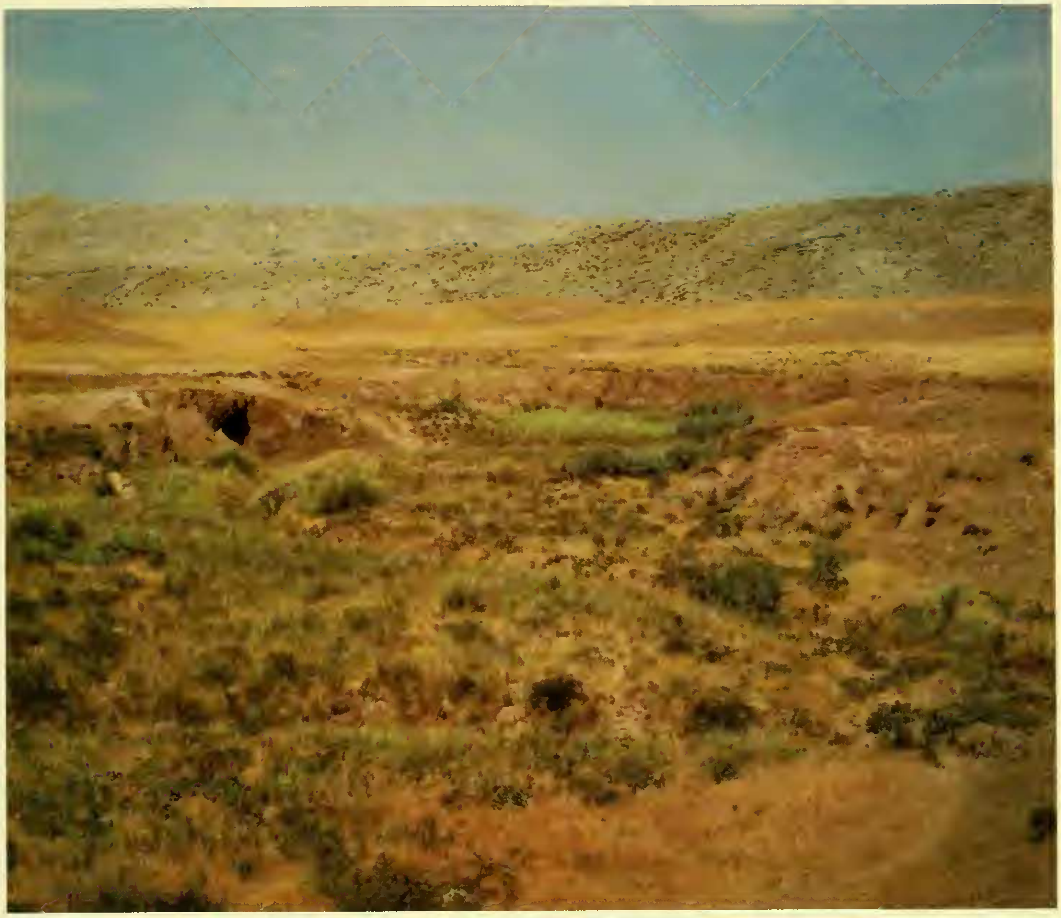

FIGURE 9. Habitat and type locality of *Acanthodactylus nilsoni*, 5 km south of Qasr-e-Shirin, Kermanshah Province, western Iran.

as far south as northern Nigeria and Eritrea; eastward it extends into the Arabian peninsula, Israel, Jordan, Iraq, Syria, and adjoining Turkey as well as western Iran (Rastegar-Pouyani, in press). On the other hand, *A. schreiberi* has been reported only from Cyprus, Lebanon, and Israel (Salvador 1982) as well as one doubtful record from Iraq (Reed and Marx 1959). The new species may well have originated as an isolate of *A. boskianus*, as the latter has been reported from Iraq (Boulenger 1919, 1921; Khalaf 1959; Salvador 1982). The presence of *A. nilsoni* in western Iran only a few kilometers from the Iraqi frontier makes it likely that it also occurs inside Iraqi territory, at least in the easternmost parts of that country. Further investigation and field work is needed to establish the position of this lizard in Iraq, and also in southern lowland areas of Ilam and Khuzistan Provinces in Iran.

ETYMOLOGY. — *Acanthodactylus nilsoni* is named in the honour of my supervisor Dr. Göran Nilson for his contribution to the study of the Iranian Plateau and Middle East herpetofauna.

MATERIAL EXAMINED. — *Acanthodactylus nilsoni* (n = 2): GNHM Re.ex. 5145–6, from Qasr-e-Shirin, Kermanshah Province, western Iran. *Acanthodactylus boskianus* (n = 3): CAS 203484; GNHM. Re. ex. 5142–43, from 2 km northwest of Harsin (34°17′N, 47°24′E), Kermanshah Province, western Iran (first record for Iran). *Acanthodactylus boskianus asper* (n = 4): GNHM. Re. ex. 3333, 3346, 4799, 4937, from Sudan, Morocco, Libya, and Gaza.

TABLE 1. Comparison of morphological characteristics in *Acanthodactylus nilsoni*, *A. boskianus*, and *A. schreiberi*. [Based on material examined, as well as literature (e.g., Salvador 1982)]

Characters	*A. nilsoni*	*A. boskianus*	*A. schreiberi*
Scales across dorsum	48–52	generally 18–43	43–64
Plates across venter	8	10–12	10
Collar scales	10–12	6–11	8–10
Gular scales in 1 longitudinal row	25–26	21–31	31–36
Lamellae under fourth toe	23–24	10–23	20–23
Temporal scales	weakly keeled	distinctly keeled	usually smooth
Dorsal scales	weakly keeled	distinctly keeled	usually granular
Dorsal scales size	moderate	usually large	small
Snout position	distinctly pointed	slightly pointed	obtuse
Anterior edge of tympanum	pectinate	pectinate	smooth
Eyelids	pectinate	slightly pectinate	unpectinate
Subocular touches the mouth	–	+/–	–

Acanthodactylus boskianus euphraticus (n = 8): BMNH 1946.8.4.83–90, from Ramadieh, Iraq (33°25′N, 43°17′E). *Acanthodactylus schreiberi* (n = 3): GNHM. Re. ex. 4646 (1–3), from Cyprus.

ABBREVIATIONS. — BMNH = British Museum of Natural History, London, England. CAS = California Academy of Sciences, San Francisco, California, USA. GNHM Re. ex. = Gothenburg Natural History Museum, Reptilia exotica, Gothenburg, Sweden.

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